Aquifer Exemptions

EPA Water Division Director Meeting
Alexandria, VA
September 10-12, 2013

Introduction

- Recent decisions on aquifer exemptions are under increased scrutiny
  - Domestic energy production is dramatically increasing
  - Drinking water sources are in greater demand
  - Oil and gas and mineral production are occurring in closer proximity to domestic wells
- Aquifer exemption requests generally fall into two categories:
  - Straightforward (often in remote areas with little public interest and poor quality aquifers);
  - More complicated (water is used as a drinking water source and/or public interest in preserving the aquifer)
- The vast majority of AEs are related to O & G production and are fairly straight-forward
- In the past, few AEs were denied, and those that were denied lacked information, or were related to an aquifer that was used as a drinking water source, etc.
- States and industry have disagreed with EPA on the need for additional information to address more complicated AEs
- EPA needs to develop a consistent national approach for working with the states to address AEs

Ongoing activities

- In an attempt to achieve greater national consistency, EPA established a working group to evaluate and resolve the issues associated with AEs
- The Ground Water Protection Council (GWPC) Board passed a resolution on January 19, 2013 to examine AE issues and possible solutions, and requested technical assistance and participation from EPA
- EPA met with States in July, 2013 to begin a dialogue on AEs and is scheduled to meet again at the end of this month
- Representatives of the uranium mining industry have requested a meeting with TX and EPA do discuss information necessary to support AE requests

Background

- The aquifer exemption process was developed as a means to balance underground disposal/mineral production and drinking water resource protection needs

- EPA adopted a broad definition of USDWs to ensure that even aquifers of relatively poor quality but sufficient quantity are protected, while providing for exemptions on a case-by-case basis
  - *"EPA believes that the most protective course was to adopt this broad definition, and allow exemptions from classification as USDWs on a case by case basis after EPA review and the opportunity for public comment."* (49 FR 20142, May 11, 1984)

- Protecting future drinking water sources is of primary importance. Although EPA can authorize aquifer exemptions, the Agency may chose not to exempt an aquifer
  - "*The use of the word "may" reserves to the Agency the discretion to decline to exempt an aquifer, even if it meets one of the criteria, if the Agency believes that other considerations warrant maintaining the USDW classification.*" (49 FR 20141, May 11, 1984)

Background (Cont…)

- Aquifer exemptions constitute a revision to a State/Tribal primacy program

- Program revisions may be substantial or non-substantial
  - Substantial revisions require a rulemaking and opportunity for public comment and must be approved by the EPA Administrator
  - Procedures for substantial revisions include public notice and comment, final approval by the EPA Administrator, and publication of the notice of approval in the *Federal Register*
  - Non-substantial program revisions are approved by the EPA Regional Administrator

Background (Cont…)

Roles in the AE Process

State / Tribal UIC Primacy Program

- Issues UIC permits
- Identifies exempted aquifers or portions of aquifers and basis for exemption (often as part of permit action)
- Provides notice and opportunity for public comment and/or hearing
- Submits request, with supporting information, to EPA for approval

EPA Regional Office

- Reviews primacy program exemption approval requests
- Refers substantial revision requests to EPA HQ
- Approves/disapproves non-substantial exemptions (Regional Administrators)

EPA HQ

- Engages in complex AE requests
- Approves/dissapproves substantial AE requests (EPA Administrator)
- Codifies substantial revisions in 40 CFR 147

Background (Cont…)

UIC Aquifer Exemptions For Which EPA has Records						
		UIC Well Classes Related to Aquifer Exemptions To Date				
Regions	# Aquifer Exemptions	I	II	III	V	Unspecified
1	0	0	0	0	0	0
2	2	0	2	0	0	0
3	8	0	8	0	0	0
4	10	1	8	0	1	0
5	83	1	82	0	0	0
6	96	1	5	89	1	0
7	8	0	6	2	0	0
8	3356	105	3163	27	0	61
9	1323	0	1321	2	0	0
10	51	32	19	0	0	0
Total	**4937**	140	4614	120	2	61
%		**2.8%**	**93.5%**	**2.4%**	**0.1%**	**1.2%**

Note: This information is still under quality review. We are currently working to improve understanding of aquifer exemptions inventory. Most aquifer exemptions are in Regions 8, and 9.

Last Updated 09/03/2013

States' Process

Presented by WDEQ and TCEQ during the July EPA/States meeting in Denver

- Requests for exemptions are received from permit applicants, usually as part of a UIC permit application
- States refer to UIC Guidance 34 as they evaluate AE requests (see appendix for information on Guidance 34)
- To delineate exempted aquifers (or portion), some states use a hydrologic approach with a simple analytical model, while others expect the applicant to delineate the boundaries

States' Process (Cont…)

Presented by WDEQ and TCEQ during the July EPA/States meeting in Denver

- After the area is delineated, the State examines all wells within up to ¼ mile to see if they tap the proposed exempted aquifer
- The State evaluates whether the aquifer is currently used as a source of drinking water within the area proposed for exemption
- Guidance 34 is not definitive on how to establish current use, but typically current use is based on whether or not there are drinking water wells in the area proposed for exemption
- An owner or operator can purchase and plug a drinking water well to meet the "current use" criterion
- To proceed with requests, a State must make an assessment that wells in vicinity do not currently use aquifers

States' Process (Cont…)

Presented by WDEQ and TCEQ during the July EPA/States meeting in Denver

- Once a State has determined an aquifer is not currently used as drinking water source, the State begins public notice process
  - 30 days
  - Almost always public noticed as part of UIC permit process

- Following the public comment period the request is submitted to EPA for review and final determination (approval, disapproval, or request for additional information)

EPA Process

Presented during the July EPA/States meeting in Denver

- Prior to State submission, EPA may engage the State on the upcoming request
- EPA Regions often hold informal meetings with the State about the request and the information needed
- Some EPA Regions ask that a draft submission be made by the State
- Information submitted varies by State and AE type

Standard Information

- General information including:
  - Aquifer Name
  - Depth
  - Confining Zones
  - Area to be exempted
  - Water quality analysis
  - Any wells which tap into the proposed exempted zone
  - Purpose of the injection
- Maps/Diagrams of the area proposed to be exempted including:
  - Geologic maps and cross sections
  - Location of water wells and other artificial penetrations including a tabular listing
  - Identification of current water supplies in area both public and private

EPA Process (Cont…)

Presented during the July EPA/States meeting in Denver

Other Information for More Complex Situations

- Cities, houses and other surface features
- Population of area and anticipated growth
- Identification of alternate water supplies in area
- Identification of current water supplies in area both public and private
- Information on current use of proposed injection zone in area
  - » Data on ground water gradient (flow, direction, velocity)
  - » Data on nearby drinking water wells – capture zone data

EPA Process (Cont…)

Presented during the July EPA/States meeting in Denver

Other Information for More Complex Situations

- Proposed injection zone water analysis
- Identification of available treatment to remove contaminants in proposed injection zone if it were to be used as a drinking water source *(if using 40 CFR 146.4(b)(3)*)*
- Cost of treatment *(if using 40 CFR 146.4(b)(3))*
- Copies of logs/tests/modeling which may have been conducted and their analysis
- Mineral/Hydrocarbon production records if available
- Copies of any communication to/from stakeholders including public notices or notes from public meetings
- Other information as necessary

*** It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption**

EPA Process (Cont…)

Presented during the July EPA/States meeting in Denver

- If there are concerns during the formal review, Regions may respond to the State informally (by phone) or in writing
  - EPA may issue a notice of deficiency to address potential concerns
- If questions require the applicant's direct involvement, the State may facilitate the operator's communication with the Region
- Depending on complexity of the issue EPA may engage with the public
- For non-substantial requests, EPA approves/disapproves requests in writing and provides rationale (statement of basis)
- For substantial requests, EPA must issue a decision in the *Federal Register* signed by the Administrator

Discussion

- How many of you are facing challenges with AEs?
- What should EPA do to respond to a growing number of requests to exempt aquifers (or portions) for the purpose of oil and gas, or mineral extraction in areas where there may be public interest in protecting groundwater?
  - Requests are taking significant time from Regions and HQ
  - Water shortages due to droughts and population growth have highlighted the importance of drinking water availability
  - It is difficult to prove that drinking water sources will remain safe; remediation has not been successful after uranium mining has taken place
- Should there be some type of threshold that triggers more information and involvement on AE requests?
- Should we revise the definition of substantial to clearly communicate when EPA HQ approval is needed?

Discussion Questions

- What form should clarification of the process take?
  - Options include:
    - Interpretive letters from EPA
    - Training
    - Revised Guidance
    - Consensus Process/Best Practices
    - Revised Regulations
    - Joint EPA/State Effort

Discussion Questions (Cont…)

- What documentation should apply to past decisions?
  - Citizen suits are now a reality
  - Companies are reluctant to provide more info than is absolutely necessary even for current decisions

- How should the Agency proceed in processing permit renewals when documentation is missing?
  - Records may have been lost, but more likely decisions for most AEs were not well documented
  - The public is likely to demand the Agency revisit the decision, while the State and the owner/operator is likely to ask that the decision be grandfathered

Appendices

Criteria for Exemption: 40 CFR 146.4

- An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in § 146.3 may be determined under § 144.7 of this chapter to be an "exempted aquifer" for Class I-V wells if it meets the criteria in paragraphs (a) through (c) of this section. Class VI wells must meet the criteria under paragraph (d) of this section:

(a) It does not currently serve as a source of drinking water; **and**

(b) ***It cannot now and will not in the future serve as a source of drinking water*** because:
(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; **or**

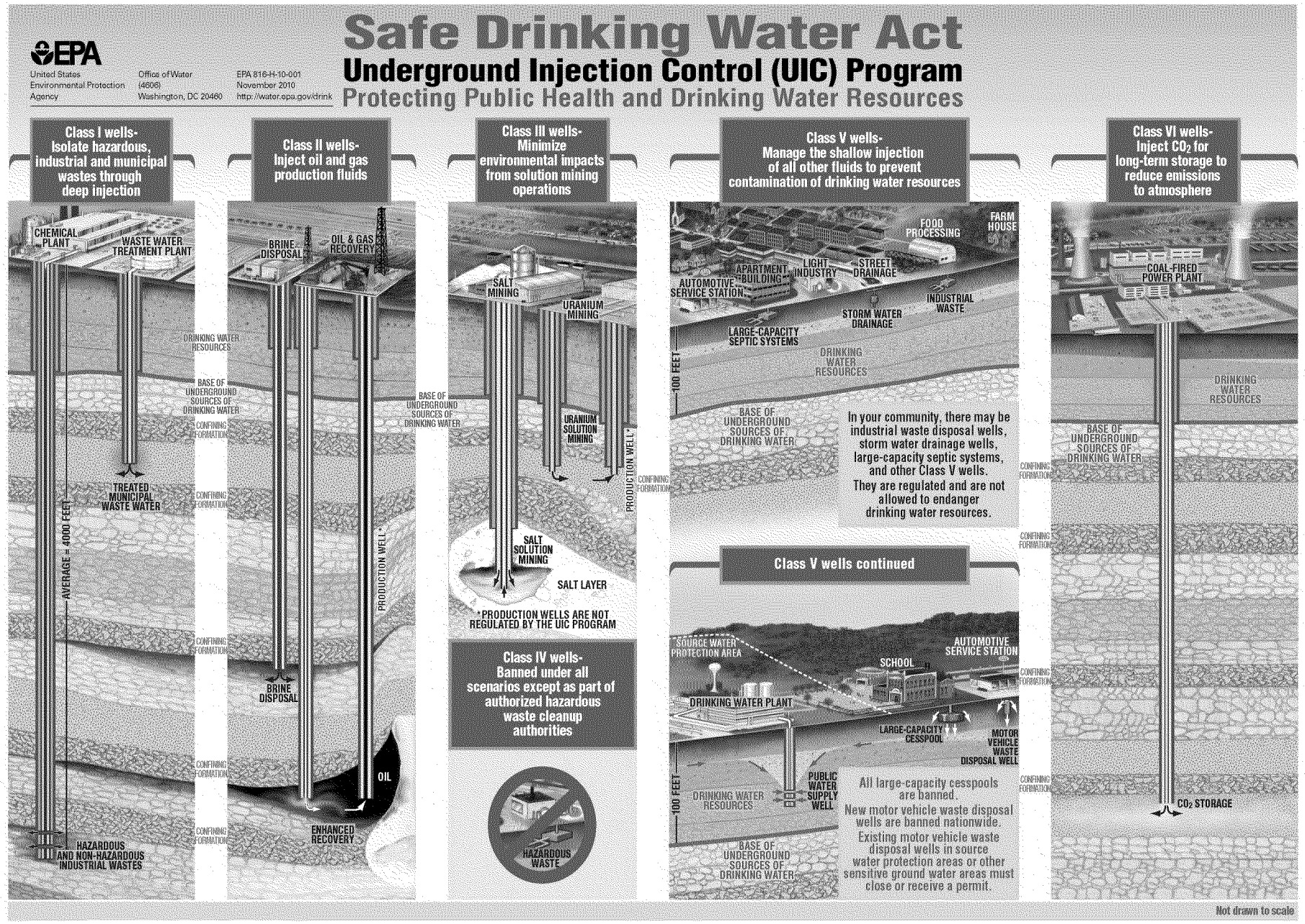
(c) ***The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system***

(d) ***The areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under § 144.7(d) of this chapter*** if it meets the following criteria:
(1) It does not currently serve as a source of drinking water; and
(2) The total dissolved solids content of the ground water is more than 3,000 mg/l and less than 10,000 mg/l; and

EPA Guidance 34

- ***EPA developed Guidance 34 (January 9, 1984) to address UIC program revisions, either in response to primacy applications or for aquifer exemptions that require a program revision***

- ***Guidance 34***
  - Supplements 146.4 by discussing specific considerations associated with each criteria
  - Provides guidelines for regional review of primacy program requests
  - Clarifies the concept of substantial and non-substantial program revision
  - Addresses review and approval of non-substantial program revisions (responsibility of the Regional Administrator)
  - Discusses evaluating current use of aquifer as a source of drinking water, including surveying the proposed exempted area to identify any water supply wells using the proposed exempted aquifer
  - Clarifies that the area to survey should cover the proposed exempted area and a buffer zone which should extend a minimum of ¼ of a mile from the boundary of the exempted area



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